Human-Computer Interaction
IS4300

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P4 – Design Sketches
Due

- **Interaction Scenarios**
  - Expand each of your activity design scenarios (3+) into full interaction scenarios, thinking about what the user perceives and the actions he/she performs at each major step in the scenario.
- **Design Options**
  - Three options for your most important window or dialog box, and brief rationale for why you selected one over the other two.
- **Preliminary interface design**.
  - One or more sketched windows or dialog boxes, along with the menus and controls that the user manipulates.
- **Storyboards**.
  - For each of your tasks/scenarios, describe how your preliminary interface would be used to perform the task. Use rough sketches to illustrate how the interface would look at important points in the task.
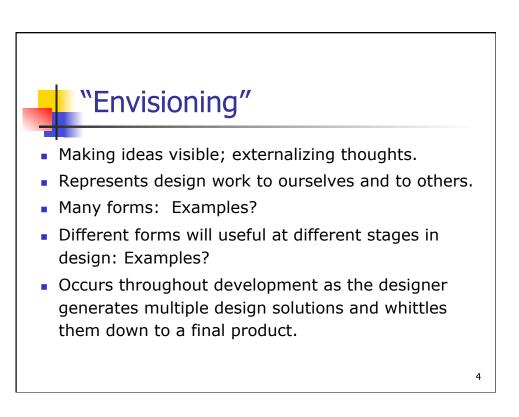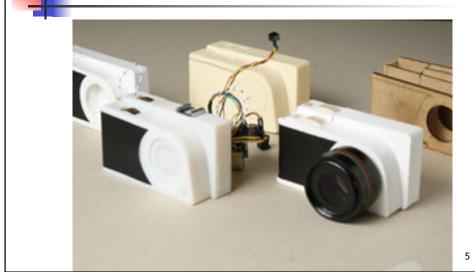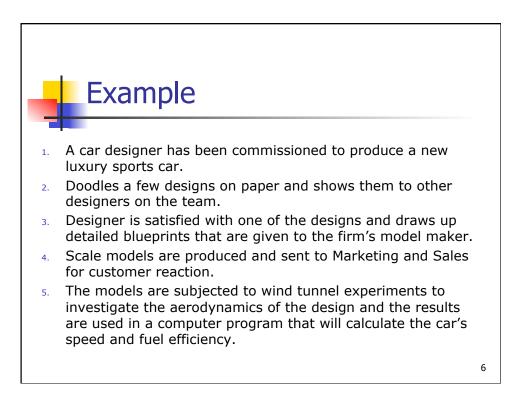
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Homework I6
due in one week

- Your objective in this assignment is to get some experience with Frames, Dialogs and layout managers in Swing. Your mission is to create your own (ideally project-related) application with the following minimum requirements:
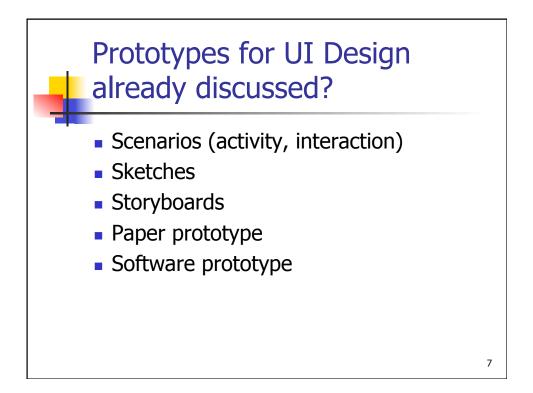 - A JFrame and a (non-modal) JDialog.
  - A JTabbedPane and JScrollPane.
  - Nested JPanels including the following layout managers: GridLayout, FlowLayout, BorderLayout
  - Some interaction widgets (JButton, etc.) on every JPanel and tab.
  - Reasonable behavior when the JFrame is resized.
- NOTE: You may not use GridBagLayout, Free Design, Box, Overlay, Null or Absolute Layout anywhere in the project.

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"Envisioning"

- Making ideas visible; externalizing thoughts.
- Represents design work to ourselves and to others.
- Many forms: Examples?
- Different forms will useful at different stages in design: Examples?
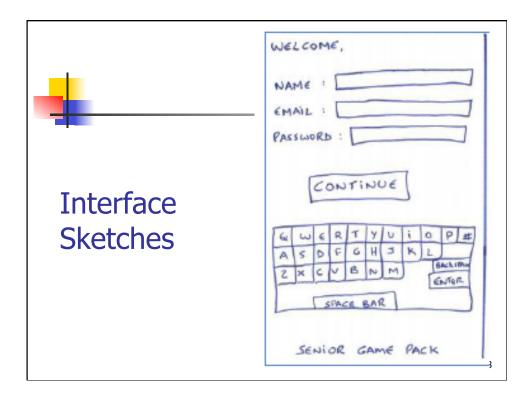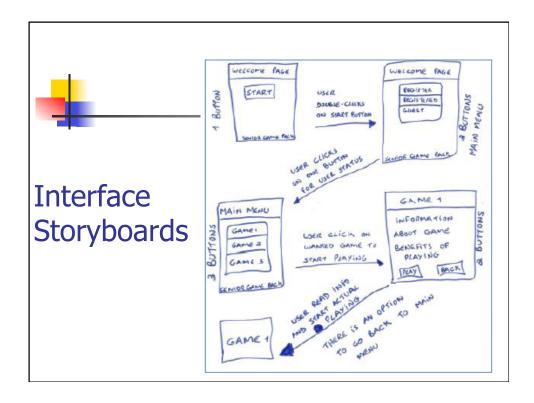- Occurs throughout development as the designer generates multiple design solutions and whittles them down to a final product.

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Prototypes suppress unnecessary details

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Example

1. A car designer has been commissioned to produce a new luxury sports car.
2. Doodles a few designs on paper and shows them to other designers on the team.
3. Designer is satisfied with one of the designs and draws up detailed blueprints that are given to the firm's model maker.
4. Scale models are produced and sent to Marketing and Sales for customer reaction.
5. The models are subjected to wind tunnel experiments to investigate the aerodynamics of the design and the results are used in a computer program that will calculate the car's speed and fuel efficiency.

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Prototypes for UI Design already discussed?

- Scenarios (activity, interaction)
- Sketches
- Storyboards
- Paper prototype
- Software prototype

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Interface Sketches

WELCOME,

NAME :

EMAIL :

PASSWORD :

CONTINUE

Q W E R T Y U i O P #
A S D F G H J K L
Z X C V B N M   BACKSPACE
                 ENTER
SPACE BAR

SENIOR GAME PACK

Interface Storyboards

Mood Boards
provide design inspiration

Navigation Maps

Wireframes

Video Prototyping

More Prototyping tools

- Paper
- PowerPoint and drawing packages
  - Sketching and simple screen navigation interaction
- Flash, Director, Visual Basic, hypermedia tools, Web tools such as Dreamweaver
- IDEs for more complex functionality (e.g., Netbeans!)
- Many custom UI prototyping tools
  - 10screens.com
  - Crank Software Storyboard suite
  - Adobe fireworks (for web); Adobe Flash Catalyst
  - Antetype.com
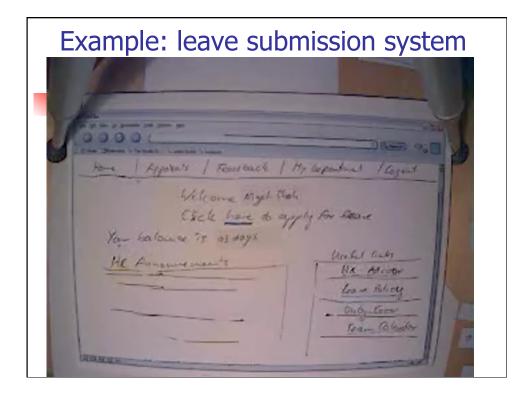 - Etc etc etc (Google "user interface prototyping tool")

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Prototyping on Paper
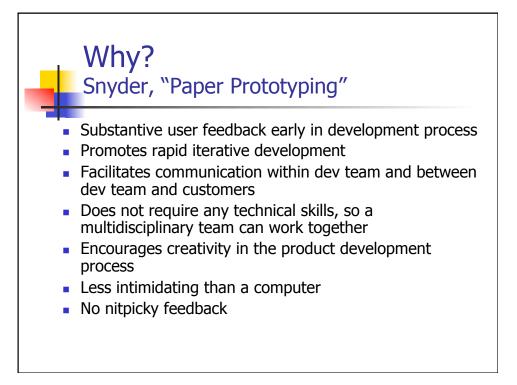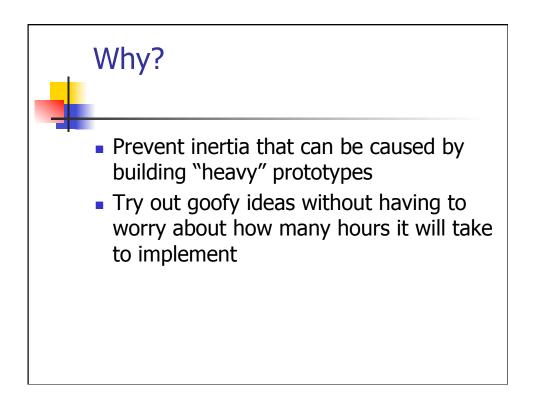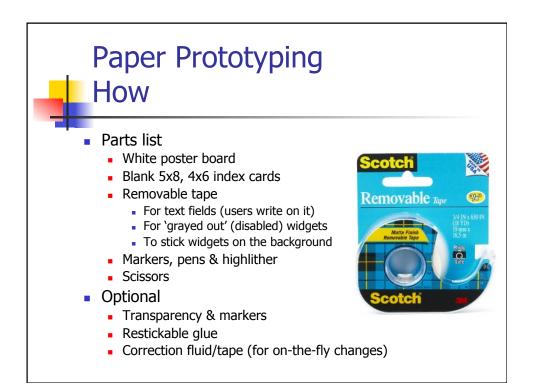
POP

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Paper Prototyping!

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Paper Prototyping
What is it?

- Perform user testing with a paper mock up of your interface
  - One person "plays computer" updating the interface whenever the user interacts with it

Example: leave submission system

Why?
Snyder, "Paper Prototyping"

- Substantive user feedback early in development process
- Promotes rapid iterative development
- Facilitates communication within dev team and between dev team and customers
- Does not require any technical skills, so a multidisciplinary team can work together
- Encourages creativity in the product development process
- Less intimidating than a computer
- No nitpicky feedback

Why?

- Prevent inertia that can be caused by building "heavy" prototypes
- Try out goofy ideas without having to worry about how many hours it will take to implement

Paper Prototyping How

- Parts list
  - White poster board
  - Blank 5x8, 4x6 index cards
  - Removable tape
    - For text fields (users write on it)
    - For 'grayed out' (disabled) widgets
    - To stick widgets on the background
  - Markers, pens & highlither
  - Scissors
- Optional
  - Transparency & markers
  - Restickable glue
  - Correction fluid/tape (for on-the-fly changes)

Widget-by-widget suggestions

- Radio buttons & check boxes
  - Removable tape for selection
- Tabbed dialog box
  - One index card/tab
- Text field
  - User writes on removable tape
- Drop-down list
  - List on card/paper
  - When item selected, computer writes on tape

Building the Prototype

- Hand sketched, monochrome
- Enlarged UI (e.g. 11x17) easier to work with and will allow almost all testing
- Can use "greeking" for large blocks of irrelevant text
- Can use photos or printouts where especially important (e.g., photo of product on a shopping page)

Demo!   Pet-O-Matic

P5a – Paper Prototyping

- Before the next class, prepare your prototype and test cases, and practice "playing computer".

- Write your 3 test tasks on separate index cards.

- We will practice with all teams in class.

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Research Articles

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FrameWire: A Tool for Automatically Extracting Interaction Logic from Paper Prototyping Tests

Yang Li [1*]   Xiang Cao [2]   Katherine Everitt [1]   Morgan Dixon [1]   James A. Landay [1]
[1] DUB Institute, University of Washington, Seattle, WA   [2] Microsoft Research Cambridge, UK
{yangli, xiangcao}@acm.org, katherine.everitt@gmail.com, {mdixon, landay}@cs.washington.edu

ABSTRACT
Paper prototyping offers unique affordances for interface design. However, due to its spontaneous nature and the limitations of paper, it is difficult to distill and communicate a paper prototype design and its user test findings to a wide audience. To address these issues, we created FrameWire, a computer vision-based system that automatically extracts interaction flows from the video recording of paper prototype user tests. Based on the extracted logic, FrameWire offers two distinct benefits for designers: a structural view of the video recording that allows a designer or a stakeholder to easily distill and understand the design concept and user interaction behaviors, and automatic generation of interactive HTML...

playing the role of the "computer", presents an interface screen (e.g., drawn on a piece of paper) to a user according to the user's actions. The user interacts with the interface...
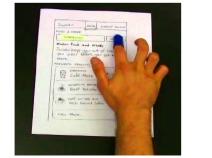

Figure 2. A user clicks on an interface component by tapping

FrameWire: A Tool for Automatically Extracting Interaction Logic from Paper Prototyping Tests

Yang Li   Xiang Cao   Katherine Everitt
Morgan Dixon   James Landay

DisplayObjects: Prototyping Functional Physical Interfaces on 3D Styrofoam, Paper or Cardboard Models

Eric Akaoka, Tim Ginn and Roel Vertegaal

Human Media Lab
Queen's University
Kingston, ON K7L 3N6

info

ABSTRACT
This paper introduces DisplayObjects, a rapid protot workbench that allows functional interfaces to be proj onto real 3D physical prototypes. DisplayObjects u Vicon motion capture system to track the locatic physical models. 3D software renditions of the 3D phy model are then texture-mapped with interactive beh and projected back onto the physical model to allow time interactions with the object. We discuss implementation of the system, as well as a selection c and two-handed interaction techniques for DisplayOb We conclude with a design case that comments on son the early design experiences with the system.

Figure 3. Brick model with 5 retroreflective markers

ORIGINAL ARTICLE

Adapting paper prototyping for designing user interfaces for multiple display environments

Brian P. Bailey · Jacob T. Biehl · Damon J. Cook ·
Heather E. Metcalf

Abstract   A multiple display en
networks personal and shared devic
workspace, and designers are just b
with the challenges of developing

Paper Prototyping
Practice Session – next class

- Each Project
  - Set up
  - Pick your most representative task
  - I'll recruit someone from another team
  - Go through entire script as if this was a real test user
    - Briefly explain what your system does
    - Read and give Task to test user
- Observers (the rest of you)
  - Note problems with protocol / method
  - Note problems with interface

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To Do

- Read
  - Nielsen Ch 6 (usability studies)
- Finish by next class
  - Paper prototype for project
- Finish next Weds (10/26)
  - I6 – Swing Layout Managers

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